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Inti A. Brazil and Miguel Farias,

Donders Institute for Brain, Cognition and Behaviour, Radboud University, 6500 HE Nijmegen, The Netherlands; Pompestichting, 6503 CK Nijmegen, The Netherlands;

Centre for Research in Psychology, Behaviour and Achievement, Coventry University Priory Street, CV1 5FB, United Kingdom. i.brazil@donders.ru.nl
miguel.farias@coventry.ac.uk <http://www.ru.nl/donders/>

<http://www.pompestichting.nl/>

<http://www.coventry.ac.uk/research/areas-of-research/psychology-behaviour-achievement/>

Abstract: We suggest an alternative explanation for the emergence of Big Gods that places less emphasis on the role of cognitive tendencies and selection of prosocial cultural variants. Instead, we argue that the fundamental motivation to reduce uncertainty and increase long-term predictability provides a better account for the rise of Big moralizing Gods in a complex and heavily regulated social environment.

Norenzayan et al.'s account of the role of Big Gods in promoting large-scale cooperation is powerful – so powerful, in fact, that it is almost too forceful. The combination of ethnographic, historic, and experimental evidence to support their argument makes the whole intellectual enterprise look so neat that there is a certain un-reality to it – we could say that it is almost too neat to be true. We will structure our comment in the following way: First, we question the accuracy of their examination of disbelief; second, we propose an alternative motivational framework to explain the transition from small to Big Gods.

The evolution of humanity's beliefs about gods is a far messier affair than the authors convey. They explain the occurrence of disbelief or atheism as a result of the emergence and spread of modern secular institutions that promoted public trust and existential security, thus replacing the role of moralizing Big Gods. This is a rather idiosyncratic and biased reading of the historical evidence. Long before the rise of modern secularity there were organized forms of disbelief, which go back to the sixth century BCE. In India, the philosophical school known as Lokayatas (meaning "the worldly ones") proposed a purely material nature of the world and rejected the existence of the soul and of karma (Frazier 2013). In South America, there are small societies without myths of creation or belief in gods, big or small (Everett 2008). And in Europe, long before the age of industrialization, schools of Epicurean philosophy have actively challenged beliefs in the supernatural and proposed solely naturalistic explanations of the origins of the world (Wilson 2008).

Lack of supernatural belief in human societies is not as exceptional as Norenzayan et al. argue. And secular institutions, for all their security and cooperative potential, cannot explain the preindustrial existence of organized forms of disbelief. We are missing a link in this evolutionary account of religion – but there is something else we are missing. The target article seems to evade the question that is begging to be answered: Why would anyone want to believe in Big (rather than small) Gods? We suggest that we will find the answer not in the cognitive tendencies (such as mentalizing) the authors enumerate in their article but in fundamental motivations to seek order and to avoid uncertainty.

Recent studies have confirmed long-held intuitions that belief in gods is rooted in the motivations to feel in control (Kay et al. 2009) and to alleviate fear or stress (Ano & Vasconcelles 2005). We can further unpack these motivations following Friston's (2010) account of how the organism seeks equilibrium with its environment. In order to find an optimal state, we will attempt to reduce uncertainty in the environment to maintain homeostasis, minimize disorder, and increase long-term predictability. By generating certain beliefs about the ultimate structure and meaning of the world and acting according to these beliefs, one can sustain a manageable level of experienced uncertainty. In the case of religion, the search for optimization can take an active form, such as engaging with a ritual to align with or seek benefits from the gods, or a passive form that allows you to adapt to the environment (e.g., by making attributions about the cause of events: "the gods willed this to happen" or "it is my karma").

But how is this relevant to understanding the transition from small gods to Big Gods? Living in large communities comes with many advantages but also places the individual in a somewhat paradoxical position. The structural complexity of larger communities requires the individual to relinquish control over the surroundings, with social conventions limiting personal behavioral repertoire. In other words, to enjoy the benefits of living in a more stable and less threatening environment, one renounces a greater freedom over one's actions. The emergence of these new social restrictions on behavior gives rise to different kinds of uncertainties, which directly extend into the religious realm – more complex communities create special places to access the gods (temples) and an elite of religious experts (priests), thus distancing individuals from smaller gods. In order to reduce the uncertainty in this more complex and restrictive social environment to an optimal level, one possibility is to modify internal belief systems. Big Gods, we would argue, emerged in increasingly complex societies driven by a motivation toward optimization of long-term predictability in a more regulated and restrictive environment.

The belief in Big Gods that reward and punish behaviors increases the long-term predictability of the environment and the perception of control. Big societies make the environment predictable by allocating the excess uncertainty resulting from the lack of direct influence on all events/outcomes to an external powerful agent. By doing so collectively, they achieve homeostasis and reduce uncertainty to an optimal and psychologically manageable level. Therefore, by believing in Big Gods that reward good deeds and punish bad actions, believers create an external

“placeholder” for the excessive cognitive uncertainty caused by a reduced control over the environment when living in very large and complex communities. In contrast, the less complicated social structure in smaller societies offers individuals a greater influence over the events and outcomes affecting them. This influence allows them to act on reducing uncertainty without needing very powerful, moralizing Big Gods to gain an optimal sense of control.

At the beginning of this commentary, we noted that Norenzayan et al.’s account of disbelief as the outcome of modern, secular structures was inaccurate. According to the motivational principle we have described, you do not need secular structures to explain disbelief. Big Gods do not quite disappear; more often, they are replaced by other Big ideas such as faith in human progress or in science, which, according to recent experimental evidence, allow nonreligious individuals to reduce uncertainty about their environment, find order, and alleviate feelings of stress and anxiety (Farias et al. 2013; Rutjens et al. 2013).

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